CBPP EXECUTIVE SKILLS WORKGROUP – JULY 2014

What are Executive Skills/Functions

Executive Functions/Skills: (Barkley, 2012)

- Those self-directed actions needed to choose goals and create, enact and sustain actions toward those goals - more simply, self-regulation to achieve goals.

Executive functioning: (www.ncld.org)

- Is conscious, purposeful and thoughtful.
- Involves activating, orchestrating, monitoring, evaluating and adapting different strategies to accomplish different tasks.
- Includes an understanding of how people tap their knowledge and skills and how they stay motivated to accomplish their goals.
- Requires the ability to analyze situations, plan and take action, focus and maintain attention and adjust actions as needed to get the job done.

PART 1:
DEFINING EXECUTIVE SKILLS

Executive Skills: Definitions

- **Response Inhibition:** The capacity to think before you act – this ability to resist the urge to say or do something allows us the time to evaluate a situation and how our behavior might impact it.(wait, stop, delay gratification))

- **Working Memory:** The ability to hold information in memory while performing complex tasks. It incorporates the ability to draw on past learning or experience to apply to the situation at hand or to project into the future. (store and recall past experience for use in future)

- **Emotional Control:** The ability to manage emotions in order to achieve goals, complete tasks, or control and direct behavior.
  (alter antecedent, desensitize to stimulus)

Executive Skills: Definitions

- **Flexibility:** The ability to revise plans in the face of obstacles, setbacks, new information or mistakes. It relates to an adaptability to changing conditions. (agenda and tolerance for change)

- **Sustained Attention:** The capacity to maintain attention to a situation or task in spite of distractibility, fatigue, or boredom. (span and goodness of fit)

- **Task Initiation:** The ability to begin projects without undue procrastination, in an efficient or timely fashion. (reduce perceived effort)

- **Planning/Prioritization:** The ability to create a roadmap to reach a goal or to complete a task. It also involves being able to make decisions about what's important to focus on and what's not important. (envision the route)

Executive Skills: Definitions

- **<u>Organization:</u>** The ability to create and maintain systems to keep track of information or materials. (effiency)

- **<u>Time Management:</u>** The capacity to estimate how much time one has, how to allocate it, and how to stay within time limits and deadlines. It also involves a sense that time is important. (estimation by event or of task completion)

- **<u>Goal-directed persistence:</u>** The capacity to have a goal, follow through to the completion of the goal and not be put off or distracted by competing interests. (keep it in mind, relate present to future)

- **<u>Metacognition:</u>** The ability to stand back and take a birds-eye view of oneself in a situation. It is an ability to observe how you problem solve. It also includes self-monitoring and self-evaluative skills (e.g., asking yourself, "How am I doing? or How did I do?"). (self evaluation, specificity)
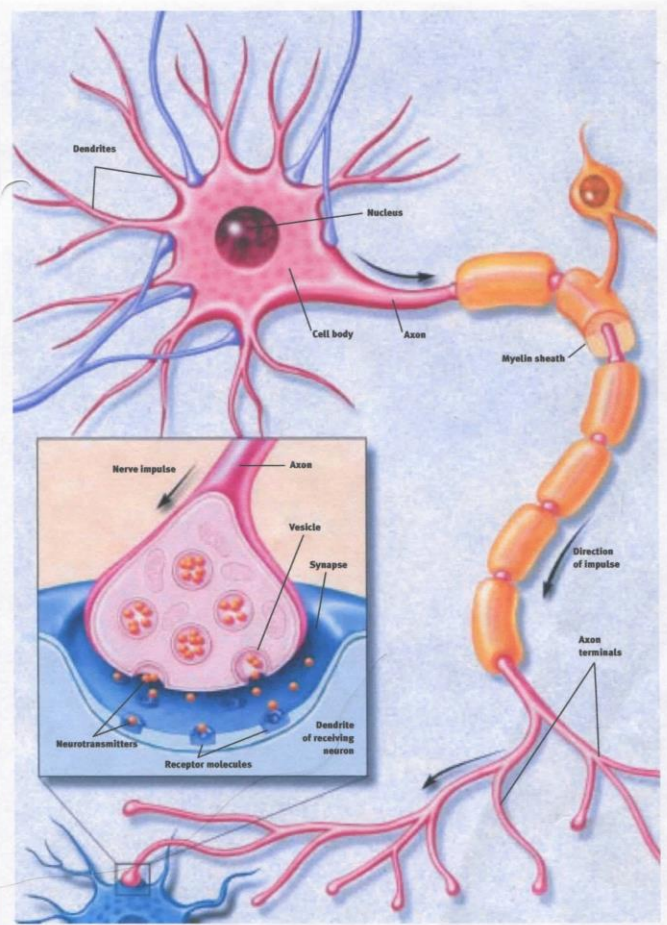
(rank order skills and describe a child)

How do executive skills develop?

Through a process called *myelination*. Myelin acts as insulation, increasing the speed with which nerve impulses are transmitted. The faster the impulse, the better the skill.

PART 2:
HOW DO EXECUTIVE SKILLS DEVELOP?

Dendrites

Nucleus

Cell body

Axon

Myelin sheath

Direction of impulse

Axon terminals

Nerve impulse

Axon

Vesicle

Synapse

Neurotransmitters

Receptor molecules

Dendrite of receiving neuron

Myelin performs 2 functions

- Increases the speed with which nerve cells fire.

- Decreases the recovery time, enabling the nerve cell to fire again quickly.

- The result: a 3,000 fold increase in the amount of information transmitted per second.

All skills, including executive skills, improve with practice...

Technique rules: Repetition builds better brain circuitry.

The more you practice, the better the skill. Practice also makes the task less effortful at both behavioral and neurological level and may enhance myelin development.

PART 3:
THE ROLE OF COACHING

Role of Adult/Coach in Facilitating Development of Executive Skills in Participants

- The adult/coach acts as a "surrogate frontal lobe" who engages in the lending of his or her executive skills to coach the person in order to facilitate the learning and development of the person's executive skills.

Factors that impact the degree to which the adult/coach will act as a surrogate frontal lobe

- Person's level of social maturity .
- Person's executive skill profile and baseline of current strengths and weaknesses.
- Presence of any educational or cognitive challenges.
- Task/situational/environmental demands on the person, goodness-of-fit with person's profile, and current environmental modifications in place.

Coach's goal in this surrogate role

- Coach's success as a surrogate frontal lobe is directly proportional to the person's success in regulating behavior to solve problems and achieve goals in the coach's absence – coach has succeeded when no longer needed (or at least less needed!).

ROLE OF EFFORT AND NEED FOR MOTIVATION IN PROMOTING EXECUTIVE FUNCTIONS

- *Effort and motivation are two concepts that are critical building blocks for understanding and addressing executive function weaknesses*

PART 4:
BROAD CONCEPTS

Need for Motivation in Promoting Executive Functions

Motivation is critical for activating and building executive skills.

Strategies for motivation – considerations
What motivates adults?

1. Stress relief

2. Attainable goals and success

3. Short-term, frequent and immediate incentives

4. Praise for effort

5. Independence and autonomous decision making

6. Have opinions valued

7. Deciding/negotiating what support they will need and having it available.

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Strategies for motivation – considerations What the adult coach needs to do

1. Convey that your intention is to help the person accomplish something beneficial to him/her

2. Focus concretely on how desired change will benefit person and enhance independence

3. Praise effort

4. Be prepared to negotiate and compromise whenever possible.

3. Be clear why its important to address problem

.

Role of Effort in Promoting Executive Functions

- Using executive functions, especially those that are weak, requires significant effort.

- Results in rapid energy depletion and susceptibility to context-dependent behavior.

- Fatigue and stress weaken EF.

Incentives can play an important role in building and sustaining motivation and effort

Incentives need to be meaningful to the individual, scaled to the expectation and used consistently to be effective.
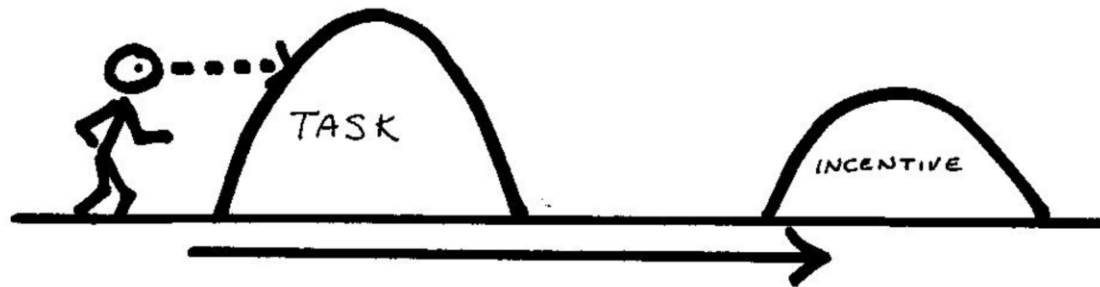
Modify task demands to match the person's capacity for effortful work

Some tasks are more effortful than others, even when the skill is well within our repertoire.

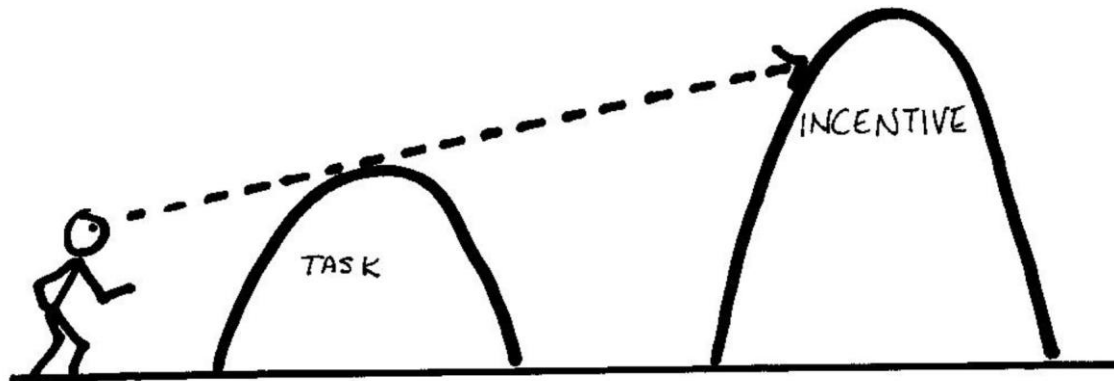*.*

((chore activity for audience and tetrus study)

Modify the relationship between the task and the incentive

Decrease task demands

OR increase the incentive

Provide the minimum support necessary for the person to be successful.

Two equally weighted components:

- *Minimal support necessary*

- *For the person to be successful*

   If too much support is provided, the person won't become independent. If too little support is provided, the person won't be successful.

Provide supports and supervision long enough for the person to achieve success.

A general rule of thumb is that it usually takes longer for a person to master a task or skill than people think it should.

The desired end point: the person can perform the task independently without reminders. If the end point has not been reached, then some support and supervision will be required.

Interventions that facilitate restoration of effort for ES use

- Physical exercise
- Relaxing, meditating for a few minutes after ES exertion
- Visualizing the good outcomes/rewards as a result of successful execution
- Periodic, small extrinsic rewards throughout the ES task.
- Self-efficacy statements prior to and during task
- Short practice of tasks requiring ES daily if possible.

IMPORTANCE OF CONTEXTS AND TASKS

- Transfer/generalization of EF.

- Narrow vs. wide transfer, near vs. far generalization.

- Not all EF training tasks are created equal.

- Train in the contexts that you want the person to improve in (community/job).

3 Key Strategies for Managing Executive Skill Weaknesses

- Intervene first at the level of the environment because goodness of fit is the immediate goal and executive skill weaknesses do not improve immediately.

- Intervene at the level of the person by—
    1. Learning or practicing the weak skill
    2. Motivating the person to use the skills they already have.

PART 5:
STRATEGIES FOR MANAGING EXECUTIVE SKILL WEAKNESSES

Begin by modifying the environment

What do we mean by "modify the environment?"

Environmental modifications are any changes
we make that are external to the person.

Strategies for modifying the environment

1. Change the physical or social environment

2. Modify the tasks you expect to perform

3. Change the ways adults interact with the person (approach as a partnership between coach and "player").

Steps to teaching executive skills

1. Identify the weak executive skills (ES Questionnaire)
2. Identify specific problem behaviors and situations that reflect the weak executive skill (checklist of behaviors associated with each ES)
3. Get a baseline of current performance in those situations (Have person estimate).
4. Set short-term goal.
5. Depending on the skill set of the person, decide how the skill will be introduced (e.g., verbal explanation, video or live model, task analysis with prompt, etc.), demonstrate for the person if needed and have the child model
6. When introducing the skill in the target situation, review the specific behaviors expected and fade this review to the person.
7. Turn the steps into pictures of a list to use for review and evaluation.

Steps to teaching executive skills

8. Practice at regular, frequent intervals but keep practice sessions brief.

- If person is being prompted to perform each step, gradually fade the prompt and let natural stimulus prompts take over (working memory).

9. Observe the person while s/he performs each step, praising effort and providing evaluation feedback to help improve performance. Have personalso evaluate.

- Praise the person when s/he makes an effort on each step and when the procedure is completed as a whole.

Steps to teaching executive skills

10. Evaluate the program's success and revise if necessary (modify task demands, increase/change incentive, etc.)

11. Fade supervision.

Working Memory

Environmental Modification	Teaching Strategy
Use orthotic memory devices: Principle of "off-loading" • Agenda books/calendars • Notebooks (to do lists) • Electronic devices & aps (iPad, iPhone)	• Directions/Past experience (prompt them to access it) • Generate options and have them choose (or elicit options from student) • Mentally rehearse association between cue and working memory

PART 6:
OPERATIONAL EXECUTION SKILLS

Planning/Prioritization

Environmental Modification	Teaching Strategy
• Demonstrate what a plan is	Walk through the planning process
• Help person design a plan/template	Have them apply plan to a simple task and gradually prompt to do more of the planning themselves
• Provide planning tools (calendar, agenda book, apps –)	Ask questions to get person to prioritize (What do you need? What should you do first?)

Organization

Environmental Modification	Teaching Strategy
• Demonstrate principle of off-loading with example from their lives (search demo) • Work with them to create scheme, template or picture • Show organizational tools and have them try them out	Help them walk through the process. Have them motorically practice it (a long-term process, requiring that they put a system in place that's monitored, initially on a daily basis.

Time Management

Environmental Modification	Teaching Strategy
Make schedules and time limits explicit Work with person to make a schedule to follow and prompt each step of the way • Picture schedules • Clocks, alarms • Tablet/phone apps • Timers	Practice how to estimate how long it takes to do something Help them to follow schedules (daily events to homework plans)

SITUATIONAL FACTORS IMPACTING EXECUTIVE SKILLS (BARKLEY, GUARE)

CONTINGENCY-SHAPED/CONTEXT DEPENDENT

RESPONSE INHIBITION AND SUSTAINED ATTENTION

VERSUS

GOAL-DIRECTED PERSISTENCE

FOUNDATIONAL SKILLS

CONTENGENCY-SHAPED/CONTEXT-DEPENDENT SUSTAINED ATTENTION

A person's sustained response depends on:

Novelty

Intrinsic Reinforcement (Interest) Value

Extrinsically Provided Consequences

Therefore, if the task is:

Stress relieving and distracting

Fun

Interesting

Immediately Rewarding

on-task behavior can be sustained (e.g., TV, social media, texting, hands-on activities).

Goal Directed Persistence

Requires the individual to—

- Generate and hold a mental representation of the goal in mind (*working memory*).

- Formulate a plan and set of rules to follow (*self-directed speech*).

- Inhibit and regulate negative affect (i.e., disappointment and frustration) associated with self-deprivation).

- Kindle self-motivated or positive drive states in support of the plan (*self-regulation of affect*).

- Experiment with multiple novel approaches toward goal achievement (*reconstitution*).

EXECUTIVE ACTIONS/SKILLS

Allow for:

- Forethought
- Planning
- Goal-Directed Actions
- Self-Discipline
- Will Power
- Persistence

Regardless of interruptions and a lack of immediate reinforcement.

THE INDIVIDUAL *WITH* WEAK FOUNDATIONAL EXECUTIVE SKILLS HAS DIMINISHED SELF-REGULATION

...therefore response inhibition and sustained attention highly context and contingency dependent. Without rewards or interest in the immediate context, work is cut short.

THE INDIVIDUAL *STRONG FOUNDATIONAL SKILLS* HAS ADEQUATE SELF-REGULATION

therefore s/he requires no source of reward or motivation in the immediate context for performance.

Response Inhibition

Environmental Modification	Teaching Strategy
• Increase external supports/prompts • Increase incentive • Use "first-then" contingency	• Prompt the person (external to internal) • Teach listen/wait/stop • Teach delayed gratification

Working Memory

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Emotional Control

Environmental Modification	Teaching Strategy
• Reduce or eliminate triggers • Give person a script to follow • Provide personal support	Teach person to recognize situations or early signs Graded exposure/guided mastery Teach coping strategy Rehearse the strategy repeatedly until it is internalized

Flexibility

Environmental Modification	Teaching Strategy
Limit flexibility demand • Reduce novelty • Highlight similarities • Provide a template • Put in place a default strategy • Turn open-ended tasks into closed-ended tasks • Make steps more explicit • "Normalize" errors	Increase support • Present expectations • Walk them through the task • Give plans or rules for managing situations • Think aloud Teach error factor Change tolerance by gradual exposure • Introduce, Introduce new situations

Sustained Attention

Environmental Modification	Teaching Strategy
• Reduce distractions • Prompt to attend (look, listen, respond) • Modify/limit task length or demand (end in sight) • Build in variety/choice • Use attention apps. • Immediately reinforce	Teach self-monitoring/peer coaching Have the person identify something to look forward to at the end of the task

Task Initiation

Environmental Modification	Teaching Strategy
• Provide cues/prompts	Have the person select cueing system
• Reduce perceived effort/task demand	Help the person limit initial demand
• Walk through first step—build behavioral momentum	Help the person select reinforcer
• Make help readily available	
• Establish set time to do non-preferred tasks	Help the person make a plan for doing the task

Goal-Directed Persistence

Environmental Modification	Teaching Strategy
Establish goals with person Reward for persistence (sticking with difficult tasks) Make sure the goal or benchmark is in sight	Point out to person how they already set goals but they may not know what they are. Define goals as something that people want to get better at or to change. Ask person to set small, achievable goals, or a goal for something they want to accomplish personally

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Metacognition

Environmental Modification	Teaching Strategy
Specify what is to be evaluated and how (goal or objective) Evaluate performance with the person. Provide sample to match or error-monitoring checklist	Help person decide on how performance will be evaluated Have the person evaluate her/his performance Compare evaluations